WHAT IS CLAIMED IS:

1. An apparatus for optimizing a transmission power in a network, comprising:

a communication unit for sending and receiving a data packet through wireless transmissions;

a power measuring unit for measuring reception power of the data packet received at the communication unit; and

a control unit for requesting an adjustment of transmission power to a slave that sends the data packet, based on the reception power of the data packet measured through the power measuring unit and a reception status parameter of the data packet.

2. The apparatus of claim 1, wherein the power measuring unit measures the reception power of the received data packet and a reception link quality, only when the control unit receives through the communication unit a message requesting a measurement of the transmission power.

3. The apparatus of claim 1, wherein at least one of a data error rate, an error correction rate, a bandwidth loss, and a delay is used as the reception status parameter.

4. The apparatus of claim 1, wherein the control unit measures a reception link quality through the reception status parameter, compares the reception link quality with a predetermined reference link quality, and requests

the adjustment of the transmission power of the slave based on a comparison result.

5. The apparatus of claim 4, wherein the control unit ends the adjustment of the transmission power of the slave when an absolute value of a link quality comparison value, which is obtained by subtracting the predetermined reference link quality from the reception link quality, is below a predetermined power adjustment unit and the link quality comparison value is above zero (0), or, outputs to the slave a message requesting an increase of transmission power when the link quality comparison is below zero (0).

6. The apparatus of claim 1, further comprising:

a power adjusting unit for adjusting the transmission power of the communication unit; and

a memory for storing transmission power data of the slave,

wherein, when the data packet is received through the communication unit requesting the adjustment of the transmission power, the control unit accordingly updates the transmission power value that is stored in the memory corresponding to the slave that requests the adjustment of the transmission power, transmits the data packet to the requesting slave, and outputs a control signal to the power adjusting unit for transmission power adjustment according to the updated transmission power.

7. The apparatus of claim 6, wherein the control unit, receiving the request for the transmission power adjustment from the slave, transmits an adjustment impossible message to the requesting slave when determining that the transmission power is at a predetermined maximum or minimum transmission power and thus the adjustment of the transmission power is impossible.

8. The apparatus of claim 6, wherein the control unit selects one of increasing and decreasing the transmission power by a predetermined unit.

9. The apparatus of claim 6, wherein the control unit broadcasts a message requesting the transmission power measurement in a predetermined periodic cycle, for receiving a transmission power adjustment requesting message.

10. A method of an apparatus for optimizing a transmission power in a network, the apparatus comprising a communication unit for sending and receiving a data packet through wireless transmissions; a power measuring unit for measuring reception power of the data packet received at the communication unit; and a control unit for requesting an adjustment of transmission power of a slave that sends the data packet, based on the reception power of the data packet measured through the power measuring unit and a reception status parameter of the data packet, the method comprising the steps of:

(a) measuring a reception link quality of the slave through the reception power of the data packet measured from the power measuring unit and the reception status parameter of the data packet, when the data packet is received through the communication unit; and

(b) sending a transmission power adjustment requesting message to the slave based on the reception link quality.

11. The method of claim 10, wherein the reception link quality measuring step (a) measures the reception power of the received data packet and the reception link quality only when a message requesting a measurement of the transmission power is received.

12. The method of claim 10, wherein at least one of a data error rate, an error correction rate, a bandwidth loss, and a delay is used as the reception status parameter.

13. The method of claim 10, wherein the step (b) comprises the sub-steps of:

(b-1) measuring the reception link quality through the reception status parameter, and comparing the measured reception link quality with a predetermined reference link quality;

(b-2) calculating a transmission power adjustment value of the slave based on a comparison between the measured reception link quality and the predetermined reference link quality; and

(b-3) sending the transmission power adjustment requesting message to the slave according to the transmission power adjustment value.

14. The method of claim 13, wherein the sub-step (b-1) ends a transmission power optimizing process between the slave and a master, when an absolute value of the link quality comparison value is below a predetermined power adjustment unit and the link quality comparison value is above zero (0), and outputs to the slave, which sends the data packet, a message requesting an increase of transmission power, when the link quality comparison is below zero (0).

15. A method of an apparatus for optimizing a transmission power in a network, the apparatus comprising a communication unit for sending and receiving a data packet through wireless transmissions; a power measuring unit for measuring reception power of the data packet received at the communication unit; and a control unit for controlling the apparatus according to the contents of the data packet received through the communication unit to communicate with other apparatuses, the method comprising the steps of:

(A) updating the transmission power stored in a memory corresponding to the slave that requests an adjustment of the transmission power according to the contents of a request, when a message requesting the adjustment of the transmission power is received through the communication unit; and

(B) adjusting the transmission power through a power adjusting unit according to the updated transmission power, when the data packet is transmitted to the slave that requests the adjustment of the transmission power.

16. The method of claim 15, wherein, when the request for the adjustment of the transmission power is received, the method further comprises the step of outputting a transmission power adjustment impossible message to the requesting slave, when determining that the adjustment of the transmission power is impossible because the transmission power is at a predetermined maximum or minimum transmission power for the requesting slave.

17. The method of claim 15, wherein in the step (B) the power adjusting unit performs one of increasing and decreasing the transmission power by a predetermined unit.

18. The method of claim 15, wherein the step (A) further comprises the step of periodically broadcasting a transmission power measurement requesting message in order to receive the transmission power adjustment requesting message.

19. A method for optimizing a transmission power in a network, comprising the steps of:

(I) determining a reference transmission power between a master and a plurality of slaves by comparing linkage information received from one of the plurality of slaves with an acceptable quality; and

(II) optimizing the transmission power between the master and the plurality of the slaves.

20. The method of claim 19, wherein the step (I) is performed by a network manager with an HCI command, 'Adapt_Transmit_Power'.

21. The method of claim 19, wherein the linkage information comprises link quality information.

22. The method of claim 21, wherein the step (I) comprises the sub-steps of:

(a) checking a current transmission power;

(b) initializing a slave counter variable N and recording a total number of the slaves;

(c) receiving the link quality information from an Nth slave;

(d) comparing the link quality information received from the sub-step (c) with the acceptable quality;

(e) recording the current transmission power as the reference transmission power and proceeding to the transmission power optimizing step, when the link quality information equals the acceptable quality in the sub-step (d);

(f) obtaining the reference transmission power by increasing the current transmission power, when the link quality information is below the acceptable quality in the sub-step (d); and

(g) obtaining the reference transmission power by decreasing the current transmission power, when the link quality information is above the acceptable quality in the sub-step (d).

23. The method of claim 22, wherein the transmission power increase and decrease is executed by an HCI command, 'Write_Transmit_Power'.

24. The method of claim 22, wherein the sub-step (f) comprises the sub-steps of:

(f-1) comparing the current transmission power with a maximum transmission power;

(f-2) increasing the current transmission power, when the current transmission power is different from the maximum transmission power in the sub-step (f-1);

(f-3) re-receiving the link quality information from the Nth slave, after the current transmission power is increased in the sub-step (f-2);

(f-4) comparing the link quality information re-received in the sub-step (f-3) with the acceptable quality, and recording the increased transmission power as the reference transmission power and proceeding to the transmission

power optimizing step (II) when the re-received link quality information equals or is above the acceptable quality;

(f-5) when the link quality information re-received in sub-step (f-4) is below the acceptable quality, comparing the increased transmission power with the maximum transmission power, and proceeding to the sub-step (f-2) if the increased transmission power is different from the maximum transmission power; and

(f-6) indicating a failure of transmission power adaptation and ending the transmission power adaptation, when the increased transmission power equals the maximum transmission power in the sub-step (f-5), or when the current transmission power equals the maximum transmission power in the sub-step (f-1).

25. The method of claim 22, wherein the sub-step (g) comprises the sub-steps of:

(g-1) comparing the current transmission power with the minimum transmission power, and proceeding to the sub-step (e) when the current transmission power equals to the minimum transmission power;

(g-2) decreasing the transmission power to the Nth slave, when the current transmission power is different from the minimum transmission power in the sub-step (g-1);

(g-3) re-receiving the link quality information from the Nth slave;

(g-4) comparing the link quality information re-received from the Nth slave in the sub-step g-3), with the acceptable quality;

(g-5) increasing the decreased transmission power and proceeding to the transmission power optimizing step (II), when the re-received link quality information is below the acceptable quality in the sub-step (g-4); and

(g-6) comparing the current transmission power, when the re-received link quality information is not below the acceptable quality, with the minimum transmission power, and proceeding to the reference transmission power recording sub-step (e) when the current transmission power equals the minimum transmission power, or proceeding to the transmission power decreasing sub-step (g) when the current transmission power is different from the minimum transmission power.

26. The method of claim 22, wherein the sub-step (e) comprises the sub-steps of:

(e-1) increasing the slave counter variable N;

(e-2) receiving the link quality information from the Nth slave;

(e-3) comparing the received link quality information with the acceptable quality;

(e-4) increasing the transmission power and receiving the link quality information, when the link quality information received from the Nth slave is below the acceptable quality in the sub-step (e-3);

(e-5) recording the reference transmission power recorded in the sub-step (e) as an adapted transmission power, when the link quality information received from the Nth slave equals or is above the acceptable quality in the sub-step (e-3); and

(e-6) comparing the slave counter variable N with a total number of the slaves, and increasing the counter variable if the total number of the slaves is different from the slave counter variable, or ending the optimization of the transmission power if the total number of the slaves equals the slave counter variable.

27. A method for optimizing a transmission power in a network, comprising the steps of:

(i) selecting a slave for a transmission power determination according to linkage information received from a plurality of slaves of the network; and

(ii) determining the transmission power based on a comparison between the linkage information received from the selected slave with an acceptable quality.

28. The method of claim 27, wherein the step (i) comprises the sub-steps of:

(i-1) receiving linkage information from the plurality of slaves of the network;

(i-2) determining an order of the plurality of slaves according to a strength of the received linkage information; and

(i-3) determining a slave having the least strength of the linkage information as the slave for transmission power determination, according to the order determined in the sub-step (i-2).

29. The method of claim 27, wherein the sub-step (ii) comprises the sub-steps of:

(ii-1) checking a current transmission power;

(ii-2) comparing linkage information of the selected slave for the transmission power determination with the acceptable quality;

(ii-3) recording the current transmission power as an adapted transmission power when the linkage information equals the acceptable quality;

(ii-4) obtaining the adapted transmission power by increasing the current transmission power, when the linkage information is below the acceptable quality; and

(ii-5) obtaining the adapted transmission power by decreasing the current transmission power, when the linkage information is above the acceptable quality.

30. A method for optimizing a transmission power of a network where a master leaves, comprising the steps of:

(A) generating backup master information based on linkage information received from a plurality of slaves constituting the network;

(B) sensing a master leaving the network;

(C) determining a backup master according to an order of the backup master information generated by the step (A);

(D) determining a reference transmission power between the backup master and the plurality of slaves; and

(E) optimizing the transmission between the backup master and the plurality of slaves.

31. The method of claim 30, wherein the reference transmission power in the step (D) is a maximum transmission power.

32. The method of claim 31, wherein the step (E) obtains an adapted transmission power that satisfies the acceptable quality, by decreasing the reference transmission power.

33. The method of claim 30, wherein the reference transmission power in the step (D) is a minimum transmission power.

34. The method of claim 33, wherein the step (E) obtains an adapted transmission power that satisfies the acceptable quality, by increasing the reference transmission power.

35. The method of claim 13, wherein in step (b-2) the calculating of the transmission power adjustment value of the slave is based on a difference between the reception link quality and the predetermined reference link quality.